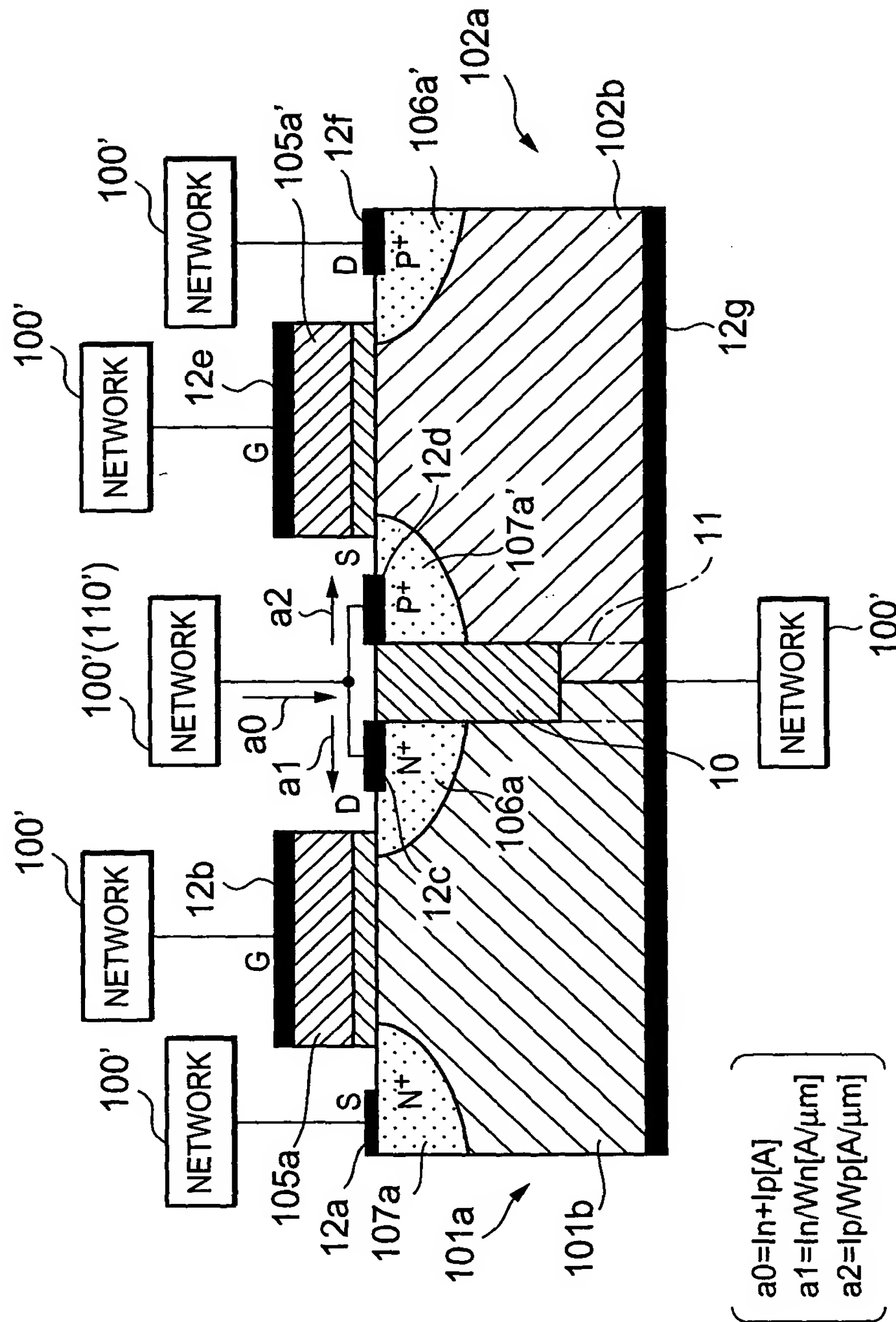


FIG. 1



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FIG. 2B

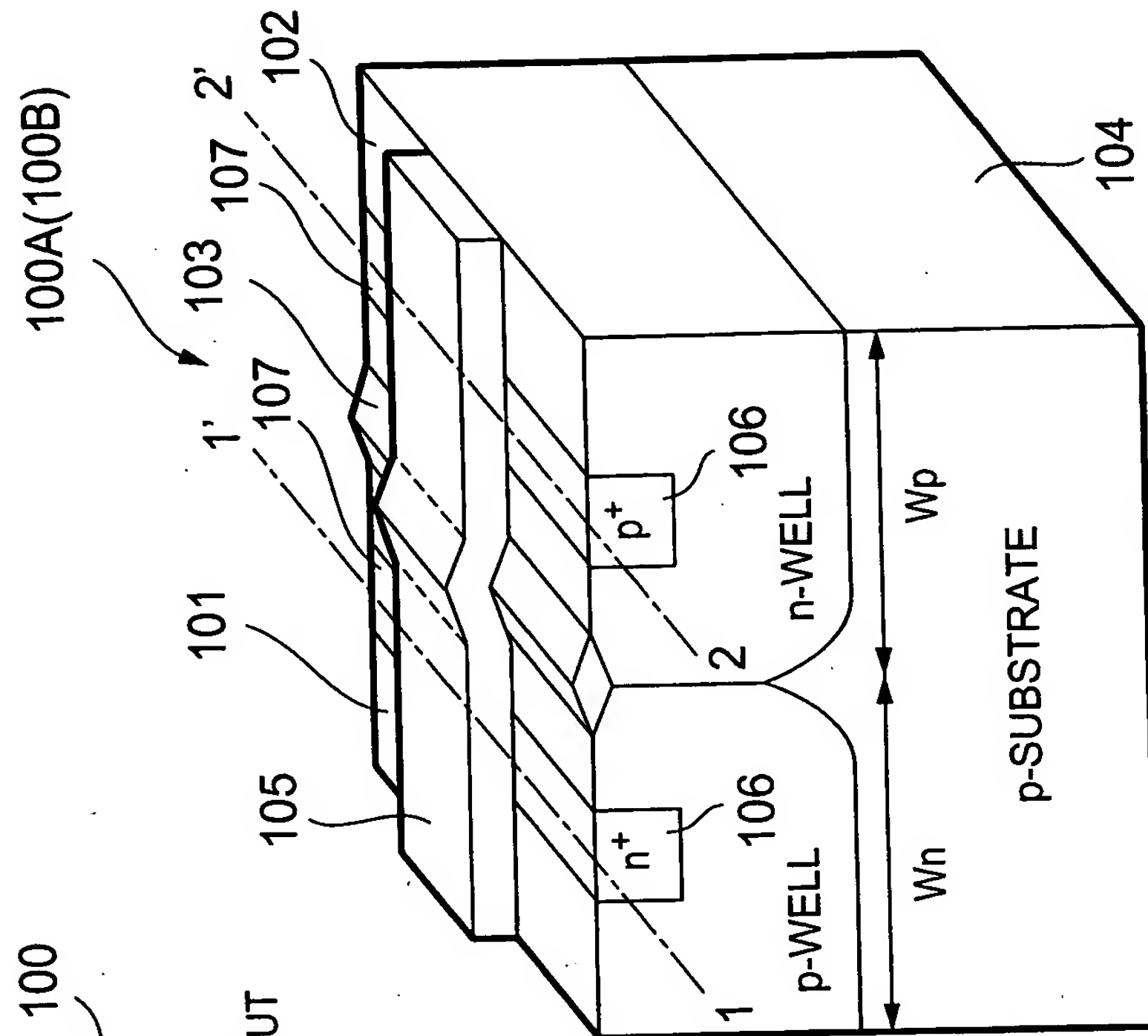
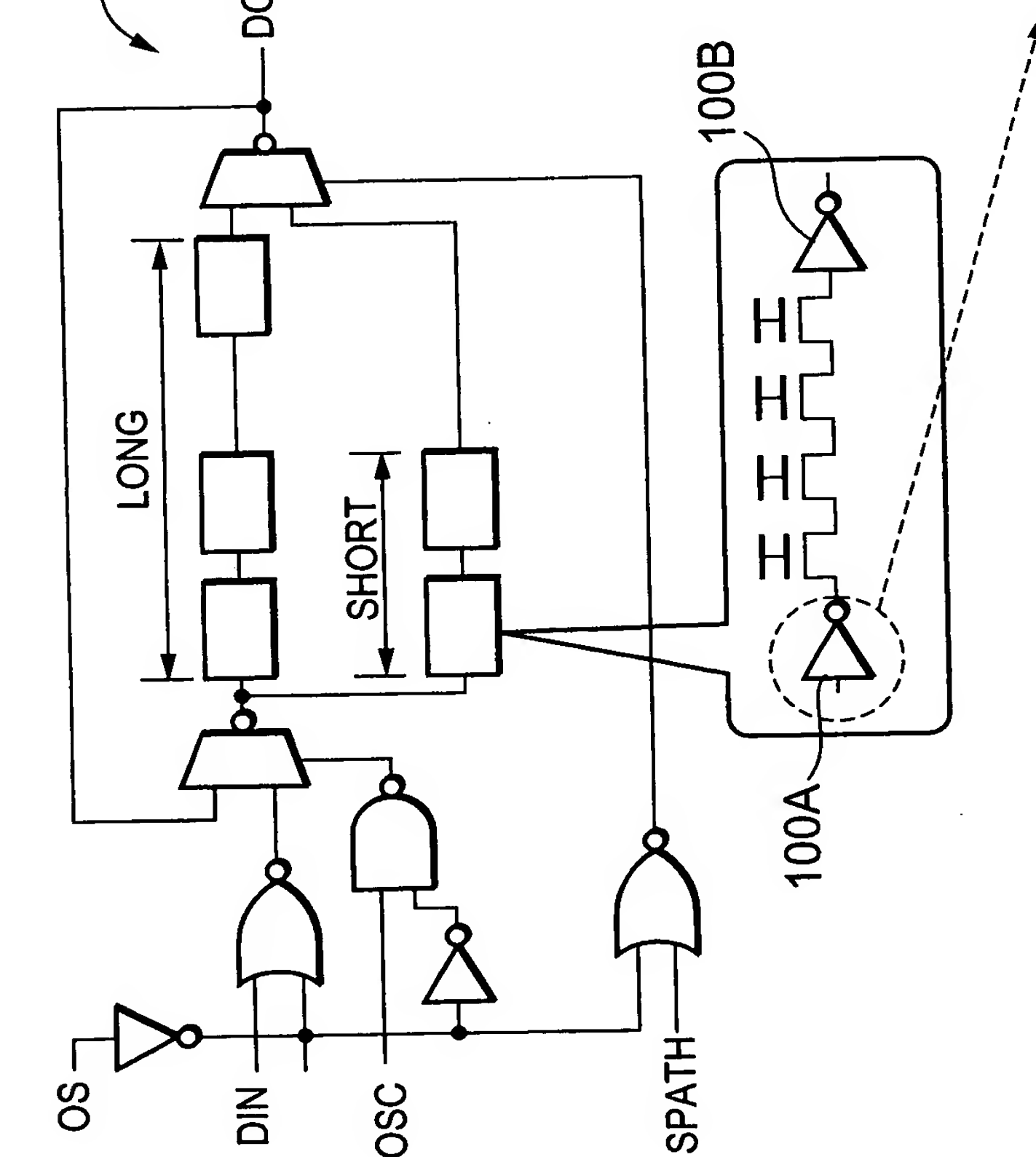


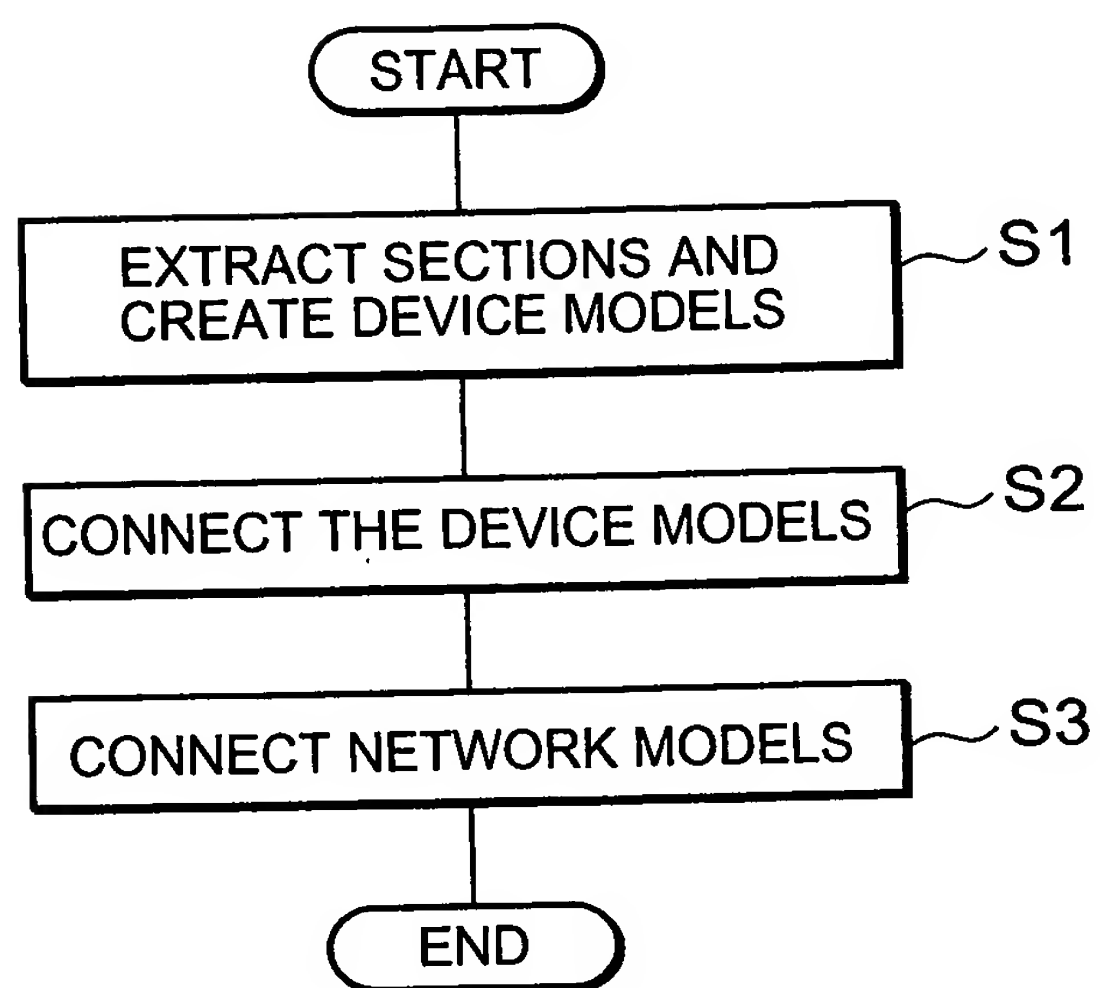
FIG. 2A



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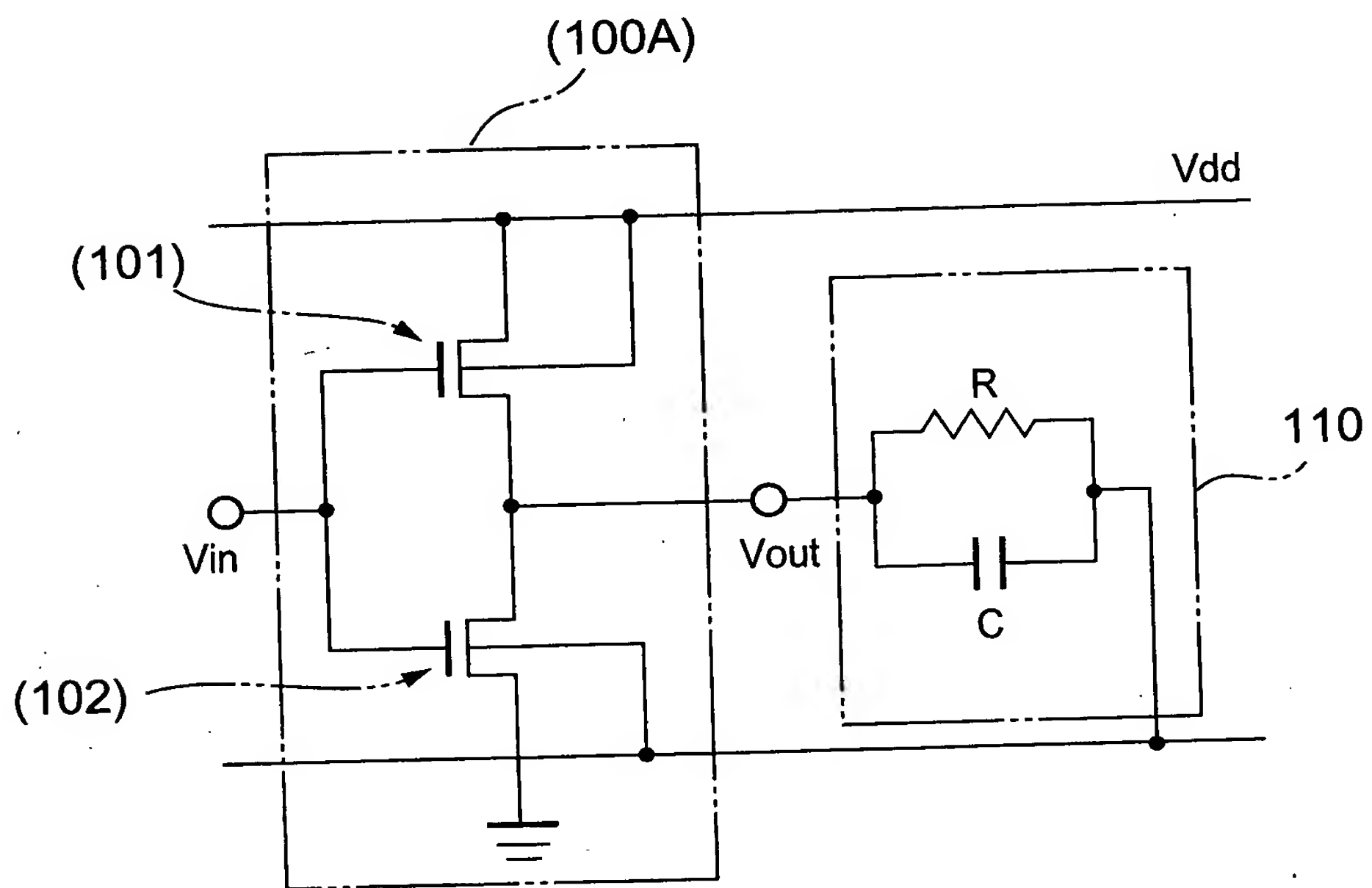
FIG. 3



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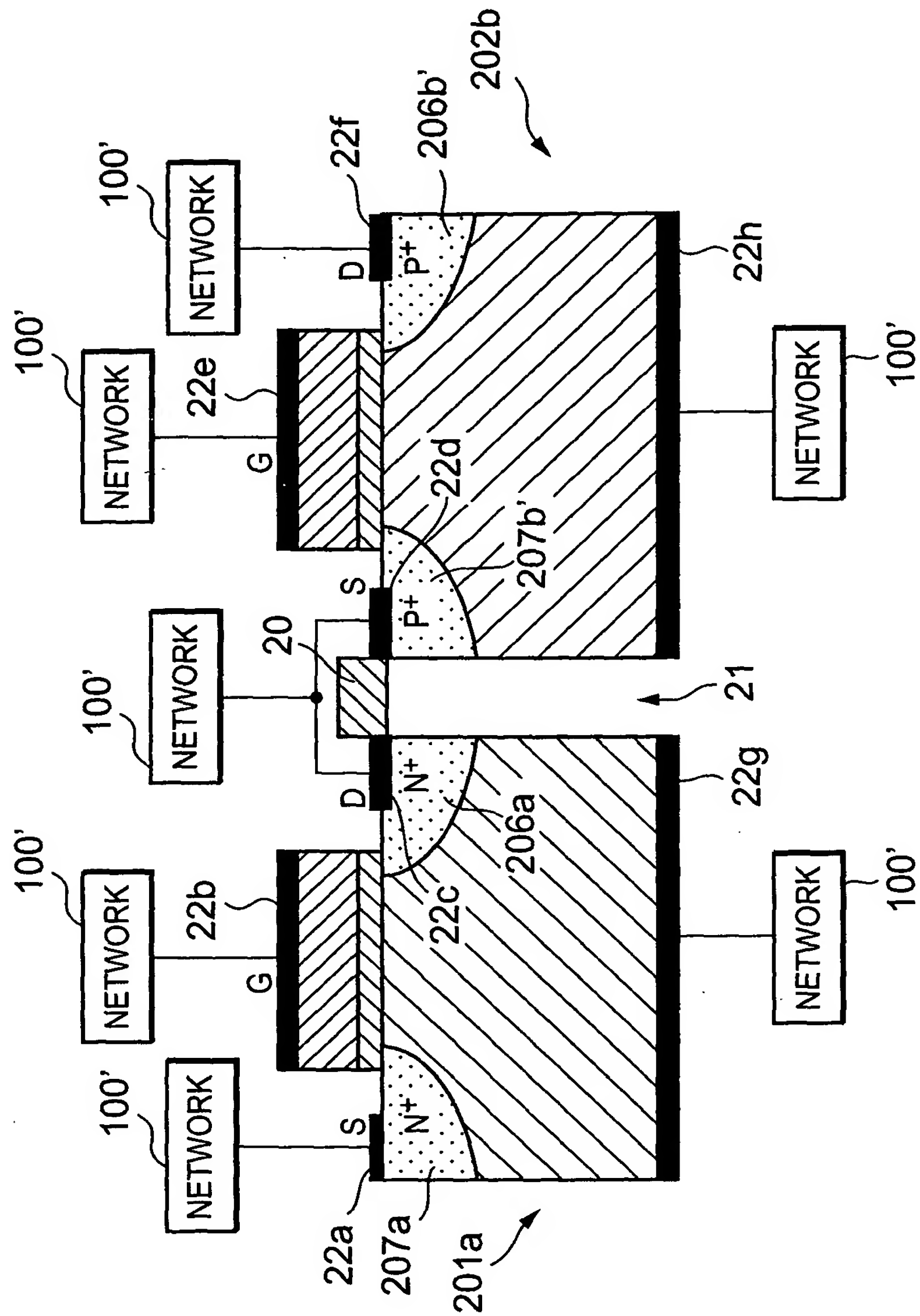
FIG. 4



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FIG. 5



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FIG. 6

$$(1) \quad -\nabla \cdot (\varepsilon \nabla \psi) = q(ND - NA + p - n)$$

$$(2) \quad \partial n / \partial t + \nabla \cdot J_n = GR$$

$$(3) \quad \partial p / \partial t - \nabla \cdot J_p = GR$$

$$(4) \quad \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} n \\ p \\ \psi \end{bmatrix} = \begin{bmatrix} n_0 \\ p_0 \\ \psi_0 + V_1 \end{bmatrix}$$

$$(5) \quad \int \text{div} J_n dv + \int \text{div} J_p dv = i_1$$

$$(6) \quad J_A \cdot \Delta y_1 + J_B \cdot \Delta x_1 + J_C \cdot \Delta y_1 = (V_{\text{ext}} - \psi_{p1})/r_1$$

$$(7) \quad \int \text{div} J_n dv + \int \text{div} J_p dv = i_2$$

$$(8) \quad J_C \cdot \Delta y_1 + J_D \cdot \Delta x_2 + J_E \cdot \Delta y_1 = (V_{\text{ext}} - \psi_{p2})/r_2$$

ε : DIELECTRIC CONSTANT
 q : UNIT CHARGE
 ND : DONOR CONCENTRATION
 NA : ACCEPTOR CONCENTRATION
 n : ELECTRON CONCENTRATION
 p : POSITIVE HOLE CONCENTRATION
 ψ : POTENTIAL
 J_n : CURRENT DENSITY (ELECTRON)
 J_p : CURRENT DENSITY (POSITIVE HOLE)
 GR : NUMBER OF ELECTRONS (POSITIVE HOLES)
 GENERATED PER UNIT VOLUME PER UNIT TIME
 n_0, p_0, ψ_0 : VALUES AT THERMAL EQUILIBRIUM
 V_1 : EXTERNAL VOLTAGE

FIG. 7

